Remarks

Applicant's responses are set forth below, in each case following a quotation (indented and in bold face small type) of the examiner's comment to which it relates.

2. Claims 1, 2, 5-13, 15, 19-21, and 34 are rejected under 35 U.S.C. 103 as being unpatentable over Gentile, 5,539,865, in view of Robinson, 4,855,934.

For claim 1, a method of compressing a digital image with at least three textures to reduce the amount of storage required for holding it prior to display is provided by Gentile in at least the abstract and Fig. 2. Generating a bitmap representing boundaries separating regions comprising pixels is provided by Gentile in at least Fig. 2 and the abstract, where rasterization provides a bitmap practically by definition, so that rasterization obviously provides for a bitmap. Generating a pointer for each region, where the pointers associate regions with textures is provided by Gentile in at least Fig. 2, and in at least c. 2, lines 50-66 and in the in the first full paragraph in c. 7. Storing the bitmap and the pointers for later display is provided in at least c. 1, lines 10-15, c. 2, lines 10-20, c. 3, lines 35-55, and c. 4, lines 44-49. Generating a bitmap representing only boundaries is not explicitly provided by Gentile, but is conventional and well known as evidenced by Robinson in at least the last full paragraph in c. 4. A bitmap of boundaries can be used for the boundaries of Gentile as shown in Fig. 2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the bitmap of boundaries of Robinson, since his bitmap is a high resolution bitmap, thus providing for an accurate boundary representation, and also because he provides for accurately portraying edge boundaries in contour texture maps over a wide dynamic range of image sizes - second full paragraph in c. 2.

For claim 2, ...

For claims 5 and 6, ...

For claim 7, ...

For claim 8, ...

For claim 9, ...

For claim 10, ...

For claim 11, ...

For claims 12 and 13, ...

For claim 15, see the rejection of at least claim 1 above.

For claim 19, see the rejection of at least claim 11.

For claims 20 and 21, see the rejection of at least claims 12 and 13.

For claim 34, see the rejection of at least claim 1, and Figs. 1 and 10 of Gentile.

Claims 1, 15, and 34 require "a bitmap representing only boundaries separating regions in said image, said boundaries comprising pixels of said image". Claims 1 and 34 require "a pointer for each of said regions, each of said pointers associating its respective region with one of said textures", while claim 15 requires "pointers, each associating its respective region with a texture." And claims 1, 15, and 34 require that the later displayed image "will include the pixels of the stored bitmap." One of the advantages of the claimed invention is that an image can be stored as a bitmap of boundaries and pointers to textures, where each region within the boundaries of the bitmap has one pointer to one texture. Applicant has amended the claims merely to clarify the claimed subject matter, that the stored bitmap is later used as part of the displayed image.

Gentile does not show or even hint at the claimed invention. Gentile describes a method for optimizing the compression of an image by choosing a variety of different compression schemes for different portions of an image. The image, as shown in Figure 2, is typically decomposed into horizontal "regions" that are rasterized into pixels. See Col. 6:2-8. "Rasterized data is created for one region at a time and stored uncompressed in RAM 26. This data is then compressed and re-stored in RAM 26

until needed." Col. 6:26-31. The rasterization referred to be Gentile is therefore the rasterization of an entire image region (i.e., each horizontal band 60, 61, etc.), not the formation of just a bitmap of boundaries. Also, different areas of each horizontal region are compressed differently (e.g., JPEG compression is used for image areas, while LZW encoding is used for text, etc.) See Col. 5:11-25. Gentile does not describe or even hint at converting the image data into (a) a bitmap of boundary pixels and (b) pointers to textures, where each region within a pixel boundary is mapped by one pointer to one texture.

Robinson does not show or even hint at the claimed invention either, whether separately or in combination with Gentile. Robinson describes a method for producing a contour texture map. The described method only temporarily uses a boundary between areas, to determine distances between texels and the boundary, as shown in Figure 2 of the Robinson reference. It is those distances that are stored. While Robinson states that the map representations "could be a series of points through which the boundary passes, or it could be a conventional bit map of the silhouette of areas", Robinson does not teach a boundary bitmap stored along with pointers, nor especially that the pixels of a boundary bitmap be used as part of a displayed image. Furthermore, there is no suggestion in either Gentile or Robinson, whether separately or combined, to use a stored boundary bitmap in this manner.

Claims 2, 5-13, and 19-21 are allowable for at least the reasons of the claims from which they depend. Applicant therefore asks that claims 1, 2, 5-13, 15, 19-21, and 34 be allowed.

3. Claims 3, 4, 14, 16-18, 22-27, and 31-33 are rejected under 35 U.S.C. 103 as being unpatentable over Gentile, 5,539,865, in view of Robinson, 4,855,934, as applied to claims 1, 2, 5-13, 15,19-21. and 34 above, and further in view of Sakuragi et al., 5,382,100, or Baisuck et al., 5,440,720.

For claim 3,. . . .

For claim 4, ...

For claim 14, ...

For claim 16, ...

For claim 17, ...

For claim 18, ...

For claim 22, ...

For claim 23, ...

For claims 24 and 25, ...

For claim 26, ...

For claim 27, ...

For claim 31, ...

For claim 32, ...

For claim 33, ...

Claim 14 requires "generating a bitmap, the bitmap representing only boundary pixels of a first one of said textures separating said regions in said image", and claims 22, 31, and 33 require "providing [or generating] a bitmap representing boundaries separating regions [in said image], said boundaries comprising pixels of said image". Claims 14, 22, 31, and 33

require that the later displayed image "includes (or will include) the pixels of the stored bitmap." Insofar as the Gentile and Robinson references are concerned, these claims are allowable for substantially the same reasons given above.

The Sakuragi reference describes storing code data corresponding to characters input from the keyboard. Col. 4:8-18. The Baisuck reference describes a Circuit Data Base composed of cells comprising reference to shapes, each shape represented as delimited strings of vertex coordinate points. Col. 3:43-51. Neither Sakuragi or Baisuck, either separately or together in conjunction with Gentile, describe or even hint at the claimed invention. None of these references, separately or together show or even hint at compressing an image into a bitmap of boundaries of regions and one or more pointers to textures, where each region has one pointer to one texture.

Applicant therefore asks that claims 3, 4, 14, 16-18, 22-27, and 31-33 be allowed.

4. Claim 28 is rejected under 35 U.S.C. 103 as being unpatentable over Gentile, 5,539,865, in view of Robinson, 4,855,934, Sakuragi et al., 5,382,100, or Baisuck et al., 5,440,720, as applied to claims 3, 4, 14, 16-18, 22-27, and 31-33 above, and further in view of Murata et al., 5,561,746.

For claim 28, ...

5. Claims 29 and 30 are rejected under 35 U.S.C. 103 as being unpatentable over Gentile, 5,539,865, in view of Robinson, 4,855,934, Sakuragi et al., 5,382,100, or Baisuck et al., 5,440,720, and Murata et al., 5,561,746, as applied to claim 28 above, and further in view of Foley et al. "Computer Graphics: Principles and Practice".

For claims 29 and 30, ...

Claims 28-30 are allowable for at least the reasons given above for the claims from which they depend.

Applicant asks that all claims now be allowed.

Apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: June 2, 1998

Wayne P. Sobon
Reg. No. 32,438

David L. Feigenbaum
Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804

Telephone: 617/542-5070
Facsimile: 617/542-8906
88440.P11